CLAIMS

1. A composition for chemical-mechanical polishing, comprising:

at least one oxidizing agent; and

at least one abrasive particle having a surface at least partially coated by a catalyst, the catalyst comprising a metal other than a metal of Group 4(b), Group 5(b) or Group 6(b).

2. The composition of claim 1, wherein the oxidizing agent comprises a per compound.

3. The composition of claim 1, wherein the oxidizing agent comprises ozone.

4. The composition of claim 1, wherein the oxidizing agent comprises an agent selected from a group consisting of a metal salt, a metal complex, and any combination thereof.

5. The composition of claim 1, wherein the oxidizing agent is selected from a group consisting of hydroxylamine, a salt of hydroxylamine, and any combination thereof.

6. The composition of claim 1, wherein the oxidizing agent is in an amount of from about 0.01 to about 30 weight percent relative to the composition.

7. The composition of claim 1, wherein the oxidizing agent is in an amount of from about 0.01 to about 10 weight percent relative to the composition.

8. The composition of claim 1, wherein the oxidizing agent is in an amount of from about 0.01 to about 6 weight percent relative to the composition.

9. The composition of claim 1, wherein the at least one abrasive particle comprises a metal oxide.

10. The composition of claim 1, wherein the at least one abrasive particle comprises a material selected from a group consisting of alumina, ceria, germania, silica, spinel, titania, an oxide of tungsten, zirconia, and any combination thereof.

11. The composition of claim 1, wherein the at least one abrasive particle comprises a metal oxide produced by a process selected from a group consisting of a sol-gel process, a hydrothermal process, a plasma process, a fuming process, a precipitation process, and any combination thereof.

12. The composition of claim 1, wherein the at least one abrasive particle comprises a resinous particle.

13. The composition of claim 1, wherein the at least one abrasive particle comprises a material selected from a group consisting of a polyacrylic acid, a polymethylacrylic acid, a polymelamine, a particle of an ion exchange resin, and any combination thereof.

14. The composition of claim 1, wherein the at least one abrasive particle comprises a plastic particle.

15. The composition of claim 1, wherein the at least one abrasive particle comprises a material selected from a group consisting of a polyacrylic acid, a polymethylacrylic acid, a polyvinyl alcohol, and any combination thereof.

16. The composition of claim 1, wherein an effective diameter of the at least one abrasive particle is from about 30 to about 170 nanometers.

17. The composition of claim 1, wherein the at least one abrasive particle and the catalyst on the surface thereof together are in an amount of from about 0.01 to about 50 weight percent relative to the composition.

18. The composition of claim 1, wherein the at least one abrasive particle and the catalyst on the surface thereof together are in an amount of from about 0.01 to about 20 weight percent relative to the composition.

19. The composition of claim 1, wherein the at least one abrasive particle and the catalyst on the surface thereof together are in an amount of from about 0.01 to about 10 weight percent relative to the composition.

20. The composition of claim 1, wherein the catalyst comprises a metal selected from a group consisting of metals in Group 1(b) and Group 8.

21. The composition of claim 1, where the catalyst comprises a metal having a standard oxidation potential of from about -0.52 to about -0.25 eV.

22. The composition of claim 1, where the catalyst comprises a metal having a standard oxidation potential of from about -0.5 to about -0.4 eV.

23. The composition of claim 1, wherein the catalyst comprises a metal selected from a group consisting of cobalt, copper, iron, and any combination thereof.

24. The composition of claim 1, wherein the catalyst comprises a material selected from a group consisting of an oxide of the metal, an acetate of the metal, a source of ionic metal, and any combination thereof.

25. The composition of claim 1, wherein the metal is substantially insoluble in the composition.

26. The composition of claim 1, wherein the catalyst coats from about 5 to about 100 percent of the surface of the at least one abrasive particle.

27. The composition of claim 1, wherein the catalyst coats from about 5 to about 80 percent of the surface of the at least one abrasive particle.

28. The composition of claim 1, wherein the catalyst coats from about 25 to about 50 percent of the surface of the at least one abrasive particle.

29. The composition of claim 1, further comprising at least one other abrasive that is free of a catalyst coating.

30. The composition of claim 1, where in the other abrasive is in an amount of from about 0.01 to about 30 weight percent relative to the composition.

31. The composition of claim 1, where in the other abrasive is in an amount of from about 0.01 to about 20 weight percent relative to the composition.

32. The composition of claim 1, where in the other abrasive is in an amount of from about 0.01 to about 10 weight percent relative to the composition.

33. The composition of claim 1, further comprising an additive selected from a group consisting of a polish-enhancement agent, a stabilization agent, a surfactant, a dispersion agent, a pH-adjusting agent, and any combination thereof.

34. The composition of claim 33, wherein the additive is present in an amount of from about 0.001 to about 2 weight percent relative to the composition.

35. The composition of claim 1, wherein a pH level of the composition is from about 2 to about 11.

36. The composition of claim 1, wherein a pH level of the composition is from about 2 to about 8.

37. The composition of claim 1, wherein the oxidizing agent is present in a prepared composition that lacks a catalyst-coated abrasive and comprises an oxidizing agent.

38. The composition of claim 1, the composition sufficient for chemical-mechanical polishing of a substrate surface having a feature thereon comprising a first material selected from a group consisting of aluminum, copper, titanium, tungsten, any alloy thereof, and any combination thereof.

39. The composition of claim 38, the composition sufficient for chemical-mechanical polishing of the substrate surface comprising a second material adjacent the feature, the second material selected from a group consisting of tantalum, tantalum nitride, titanium, titanium nitride, titanium tungsten, tungsten, and any combination thereof.

40. A method of polishing a substrate surface having at least one feature thereon comprising a metal, comprising:

providing the composition of any one of claims 1-5, 9, 12-14, and 20-25; and

chemical-mechanical polishing the feature with the composition.

41. The method of claim 40, wherein said providing comprises combining the at least one abrasive particle, the surface of which is at least partially coated with the catalyst, with a prepared composition, the prepared composition lacking a catalyst-coated abrasive and comprising an oxidizing agent.

42. The method of claim 40, wherein the metal is selected from a group consisting of aluminum, copper, titanium, tungsten, any alloy thereof, and any combination thereof.

43. The method of claim 40, wherein the feature is adjacent a material selected from a group consisting of tantalum, tantalum nitride, titanium, titanium nitride, titanium tungsten, tungsten, and any combination thereof.

44. The method of claim 40, wherein the chemical-mechanical polishing comprises applying a pressure of from about 1 to about 6 pounds per square inch to the feature.

45. The method of claim 40, said method sufficient to remove the metal at a rate of from about 100 to about 15,000 Angstroms per minute.

46. The method of claim 40, said method sufficient to provide the substrate surface at from about zero to about 40 percent within-wafer nonuniformity.

47. The method of claim 40, said method sufficient to provide the substrate surface at from about zero to about 12 percent within-wafer nonuniformity.

48. The method of claim 40, said method sufficient to provide the substrate surface wherein any microscratch thereon produced during the chemical-mechanical polishing is less than about 20 Angstroms.

49. A substrate having a surface comprising at least one feature thereon comprising a metal, said substrate produced by the method of claim 40.

50. The substrate of claim 49, wherein the metal is selected from a group consisting of aluminum, copper, titanium, tungsten, any alloy thereof, and any combination thereof.

51. The substrate of claim 49, wherein the feature is adjacent a material selected from a group consisting of tantalum, tantalum nitride, titanium, titanium nitride, titanium tungsten, tungsten, and any combination thereof.

52. The substrate of claim 49, the substrate surface having from about zero to about 40 percent within-wafer nonuniformity.

53. The substrate of claim 49, the substrate surface having from about zero to about 12 percent within-wafer nonuniformity.

54. The substrate of claim 49, wherein any microscratch on the substrate surface produced during the chemical-mechanical polishing is less than about 20 Angstroms.